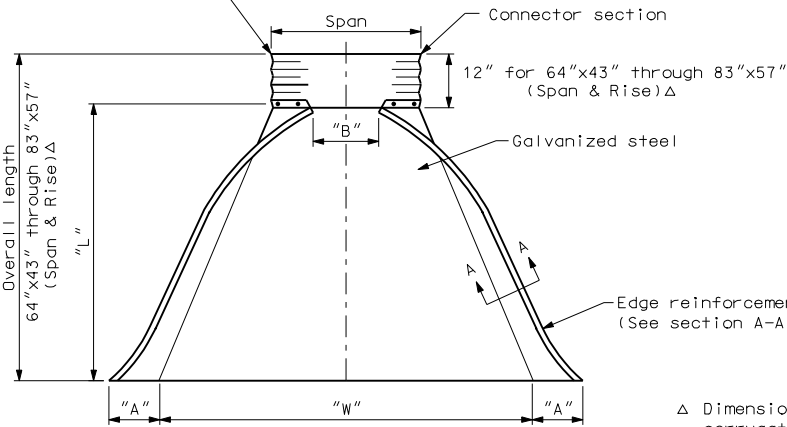


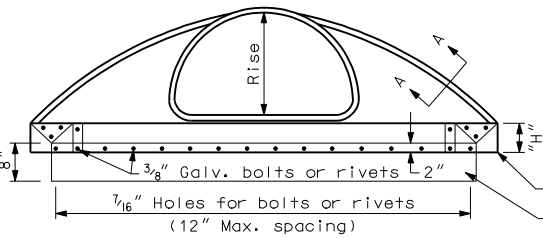
CORRUGATED STEEL PIPE ARCH CULVERTS
AND END SECTIONS

D-714-5

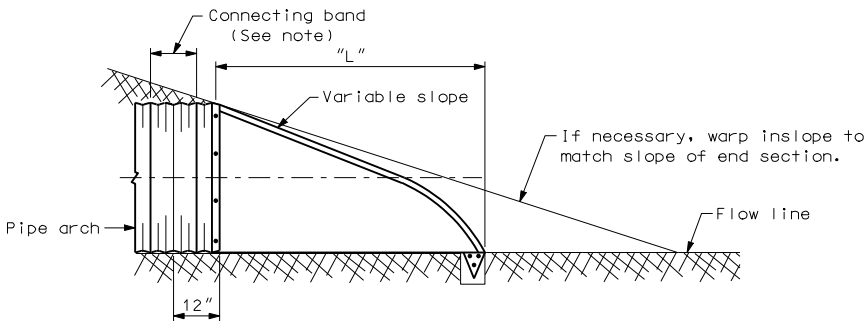
This connection for 64"x43" through 83"x57"
pipe arch to be bolted or riveted to the
end section with $\frac{3}{8}$ " galv. bolts or rivets.



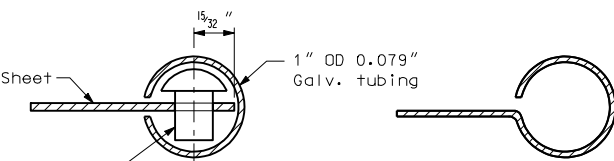
PLAN



ELEVATION

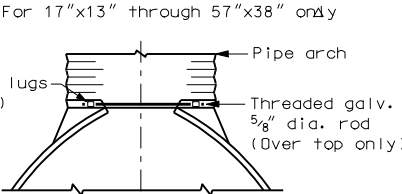


TYPICAL CROSS SECTION
(Showing connector section)



NOTE: Tubing is slipped over the sheet and
rivets prior to forming operations of
the end section.

SECTION A-A



ROD CONNECTION DETAIL

2 2/3" BY 1/2" CORRUGATIONS									
EQUIV. PIPE DIA.	WATERWAY AREA	SPAN	RISE	MIN. COVER	MAXIMUM FILL HEIGHT (FEET) FOR GALV. THICKNESS				
IN	SQ. FT.	IN	IN	IN	0.064	0.079	0.109	0.138	0.168
15	1.1	17	13	18	13				
18	1.6	21	15	18	12				
21	2.2	24	18	18	10				
24	2.8	28	20	18	10				
30	4.4	35	24	18	9				
36	6.4	42	29	18	9				
42	8.7	49	33	18		8			
48	11.4	57	38	18			8		
54	14.3	64	43	18			8		
60	17.6	71	47	18				8	
66	21.3	77	52	18					8
72	25.3	83	57	18					9

Fill height tables are based on the following criteria:

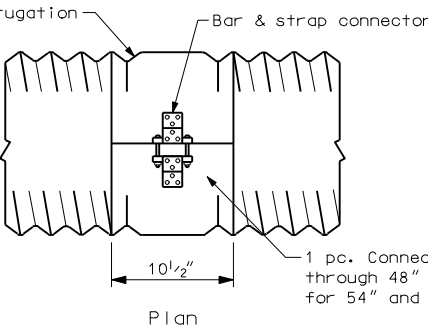
1. Embankment weight = 120 lb/ft³
2. Max. pipe deflection = 5%
3. Bedding - Class C
4. Compaction = 95% proctor density
5. Modulus of passive soil resistance (E') = 1400 psi
6. HS-20 Live load
7. Corner bearing pressure = 2 tons/ft²

NOTES:

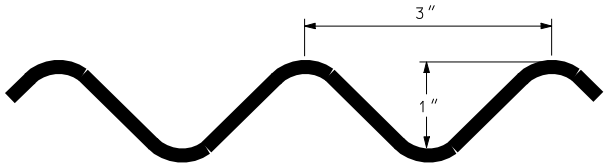
Pipe and connecting bands shall conform to applicable
sections of NDDOT Standard Specifications and to AASHTO M-36.

Top edge of all end sections to have tubing reinforcement
or rolled tube reinforcement (See section A-A). This
reinforcement is to be supplemented with 2"x2"x1/4" galv.
angle for 77"x52" and 83"x57" sizes. Angles to be attached
by galv. $\frac{3}{8}$ " dia. bolts and nuts. Angles are to extend from
pipe to the corner wing bend.

Angle reinforcement shall also be placed under the center
panel seams on 77"x52" and 83"x57" sizes.

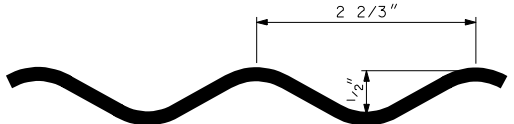


CONNECTING BAND DETAILS FOR HELICAL, WELDED-SEAM CULVERT



3" x 1" CORRUGATIONS

(5"x1" Corregation may be used in lieu of 3" x 1")



2 2/3" x 1/2" CORRUGATIONS

FILL HEIGHT TABLES
RIVETED, WELDED, OR HELICAL FABRICATION

3" BY 1" CORRUGATIONS									
EQUIV. PIPE DIA.	WATERWAY AREA	SPAN	RISE	MIN. COVER	MAXIMUM FILL HEIGHT (FEET) FOR GALV. THICKNESS				
IN	SQ. FT.	IN	IN	IN	0.064	0.079	0.109	0.138	
36	6.4	43	27	18	12				
42	8.7	50	31	18	12				
48	11.4	58	36	18	12				
54	14.3	65	40	18	12				
60	17.6	72	44	18	12				
66	22	73	55	18	15				
72	26	81	59	18		15			
78	31	87	63	18		14			
84	35	95	67	18			13		
90	40	103	71	24				12	
96	46	112	75	24				11	
102	52	117	79	24				10	
108	58	128	83	24					9
114	64	137	87	24					9
120	71	142	91	24					8

PIPE ARCH DIMENSION		GALV. THICK.	END SECTION DIMENSIONS					APPROX. SLOPE RATE	BODY PIECE
SPAN	RISE		A	B	H	L	W		
IN	IN		IN	IN	IN	IN	IN		
17	13	0.064	7	9	6	19	30	2 1/2:1	1
21	15	0.064	7	10	6	23	36	2 1/2:1	1
24	18	0.064	8	12	6	28	42	2 1/2:1	1
28	20	0.064	9	14	6	32	48	2 1/2:1	1
35	24	0.079	10	16	6	39	60	2 1/2:1	1 or 2
42	29	0.079	12	18	8	47	75	2 1/2:1	1 or 2
49	33	0.109	13	21	9	53	85	2 1/2:1	2
57	38	0.109	18	26	12	63	90	2 1/2:1	2
64	43	0.109	18	30	12	70	102	2 1/2:1	2
*71	47	0.109	18	33	12	77	114	2 1/2:1	3
*77	52	0.109	18	36	12	77	126	2:1	3
*83	57	0.109	18	39	12	77	138	2:1	3

*These sizes have 0.138" center panels.

Manufacturers tolerances of above dimensions will be allowed.

Splices to be the lap riveted type.

Multiple panel bodies shall have lap seams which are to be tightly
joined with $\frac{3}{8}$ " dia. galv. bolts or rivets. Nuts to be torqued to 25 lbs.+.

① Applicable to equivalent sizes of 3"x1" corrugations.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
04-28-89	Toe plate note
12-06-95	Corrigation
06-25-03	Revised Layout
12-01-04	PE Stamp added

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